Space Weather Forecast

Issued on Monday, 02 October 2023 at 13:21 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

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Space Weather Forecast Headline: Chance of Moderate-flares throughout. Slight chance of isolated G1/Minor Storm interval, mainly day 3 (04 Oct).

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Activity in the last 24 hours has been Low, with only common class flares recorded. There are ten sunspot regions on the disc. Growth in the two active regions in the northeast looks to have now largely stalled. The larger region in the southeast has also seen any significant growth in intermediate spots stall, but maintains some slight complexity. After recent emergence a spot near centre disk appears to be stabilising as a small and relatively simple spot. A couple of other small spots remain unnumbered. The other regions are smaller, simpler and either stable or declining.

No Earth-directed CMEs (coronal mass ejections) have been observed in available imagery.

Solar Wind / Geomagnetic Activity: Solar winds were indicative of slow wind conditions. Speeds were background, at around 380-350 km/s. The interplanetary magnetic field (IMF), Bt, was weak throughout. The north-south component, Bz, has been variable in direction, varying weakly between +5nT and -5nT. Resultant geomagnetic activity was Quiet to Unsettled (Kp 1-3).

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) remained at background levels, with no Solar Radiation storms observed.

Four-Day Space Weather Forecast Summary

Solar Activity: Low to Moderate with a chance of further isolated Moderate-class flares.

Solar Wind / Geomagnetic Activity: There are currently no Earth-directed CMEs expected. Solar winds current near background, some enhancement possible later day 1 (02 Oct) due to potential fast wind influence, however this is low confidence. Some influence from a coronal hole fast wind is more likely into day 2 (03 Oct) or day 3 (04 Oct). While more likely to connect due to its location, this is a smaller and newer feature, with low confidence for the strength of any connection. Mainly Quiet geomagnetic activity expected with isolated Unsettled spells. Any fast wind arrival has the potential to bring a spell of Unsettled to Active, with a slight chance of G1 Minor Storm intervals.

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) is forecast to remain at Background levels, with no Solar Radiation storms expected.

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Met Office Space Weather Forecast

Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	10	10	20	1
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	No	40	40	40	40
Very Active	R3 to R5 X	No	1	1	1	1

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	1	1	2	2
Very Active	≥ S3 *	No	1	1	1	1

* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)

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